

Notice of Allowability

Application No.

10/682,652

Examiner

Richard Chan

Applicant(s)

BARGROFF, KEITH P.

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/15/07.
2. ☒ The allowed claim(s) is/are 1, 3-11 and 13-26.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-26 are allowed.

The following is an examiner's statement of reasons for allowance:

With respect to claim 1, Wolkstein discloses an IQ network comprising: a phase shift circuit **38** having an in-phase mixer **30** port configured to receive the in-phase signal from **amplifier 58**, a quadrature-phase mixer **28** port configured to receive the quadrature phase signal from **amplifier 58**, and an output port, the phase shift circuit **38** configured to provide substantially a ± 90 degree phase shift between the in-phase and quadrature-phase mixer ports; however, Dujmenovic does not disclose a back termination coupled to the termination port of the phase shift circuit, the back termination having an impedance value substantially equal to the characteristic impedance of the phase shift circuit at the termination port.

However, Wolkstein discloses a back termination **226, 222, 228 and 230** coupled to the termination port of the phase shift circuit **222 Col.3 lines 55-66**, the back termination having an impedance value substantially equal to the characteristic impedance of the phase shift circuit **258** at the termination port. Wolkstein continues to disclose wherein the termination port **222, 259** of Wolkstein can be implemented on either the in-phase mixer port **228** or the quadrature-phase mixer **230** port of the impedance-matched IQ network of Dujmenovic.

However the prior art does not specifically disclose wherein said termination port of the phase shift circuit couples to the in-phase or the quadrature phase mixer port of the phase shift circuit, and wherein the in-phase or quadrature mixer port to which the termination port is coupled to comprises a single ended signal port or a one of two ports that collectively form a differential signal line.

Claims 2-10 and 24-26 are dependent on allowable claim 1.

With respect to claim 11, Dujmenovic discloses an image rejection circuit, comprising: an in-phase mixer 30; a quadrature phase mixer 28; a phase shift circuit 38 having an in-phase mixer 30 port coupled to the in-phase mixer, a quadrature-phase mixer 28 port coupled to the quadrature phase mixer, a termination port, and an output port, the phase shift circuit 38 configured to provide substantially a ± 90 degree phase shift between the in-phase and quadrature-phase ports; however Dujmenovic does not disclose an impedance-matched IQ network coupled to the in-phase mixer and to the quadrature phase mixer, the impedance-matched IQ network comprising a back termination coupled to the termination port of the phase shift circuit, the back termination having an impedance value substantially equal to the characteristic impedance of the phase shift circuit at the termination port.

The Aggarwal reference however discloses an impedance-matched IQ network Fig.2 20 coupled to the in-phase mixer 9 and to the quadrature phase mixer 10, the impedance-matched IQ network.

And the Wolkstein reference discloses the back termination 226 having an impedance value substantially equal to the characteristic impedance of the phase shift circuit at the termination port **224 Col.3 lines 55-66**. Wolkstein continues to disclose wherein the termination port 228 and 230 comprises either the in-phase mixer port 228 or the quadrature phase mixer port 230 of the phase shift circuit.

However the prior art does not specifically disclose wherein said termination port of the phase shift circuit couples to the in-phase or the quadrature phase mixer port of the phase shift circuit, and wherein the in-phase or quadrature mixer port to which the termination port is coupled to comprises a single ended signal port or a one of two ports that collectively form a differential signal line.

Claims 13-22 are dependent on allowable claim 11.

With respect to claim 23, Aggarwal discloses an impedance-matched IQ network 20 Fig.1 and Fig.2 configured to provide substantially a ± 90 degree phase shift with phase shifter 6 and 12 to a received quadrature phase signal Q_{IN} relative to a received an in-phase signal I_{IN} , and to provide a summation of the ± 90 degree phase-shifted quadrature phase signal and the received in-phase signal with signal adder 13, the impedance matched IQ network 20 comprising: phase shifting means having an in-phase mixer port 9 configured to receive the in-phase signal, a quadrature-phase mixer port 10 configured to receive the quadrature phase signal, and an output port 31 and 32, the phase shift circuit 12 and 6 configured to provide substantially a \pm

.90 degree phase shift between the in-phase and quadrature-phase mixer ports; however Aggarwal does not disclose wherein the network contains a termination means coupled to the termination port of the phase shifting means, the termination means having an impedance value substantially equal to the characteristic impedance of the phase shift means at the termination port.

The Wolkstein reference however discloses wherein the network contains a termination 226 means coupled to the termination port 224 of the phase shifting means 258, the termination means 226 having an impedance value substantially equal to the characteristic impedance of the phase shift means at the termination port.

However the prior art does not specifically disclose wherein said termination port of the phase shift circuit couples to the in-phase or the quadrature phase mixer port of the phase shift circuit, and wherein the in-phase or quadrature mixer port to which the termination port is coupled to comprises a single ended signal port or a one of two ports that collectively form a differential signal line.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

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2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chan whose telephone number is (571) 272-0570. The examiner can normally be reached on Mon - Fri (9AM - 5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571)272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Richard Chan
Art Division 2618
12/21/07




NAY MAUNG
SUPERVISORY PATENT EXAMINER